

## **ABSTRACT OF THE DISCLOSURE**

5 A method of depositing a film of a metal chalcogenide including the  
steps of: contacting an isolated hydrazinium-based precursor of a metal  
chalcogenide and a solvent having therein a solubilizing additive to form a  
solution of a complex thereof; applying the solution of the complex onto a  
substrate to produce a coating of the solution on the substrate; removing  
the solvent from the coating to produce a film of the complex on the  
10 substrate; and thereafter annealing the film of the complex to produce a  
metal chalcogenide film on the substrate. Also provided is a process for  
preparing an isolated hydrazinium-based precursor of a metal  
chalcogenide as well as a thin-film field-effect transistor device using the  
metal chalcogenides as the channel layer.

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